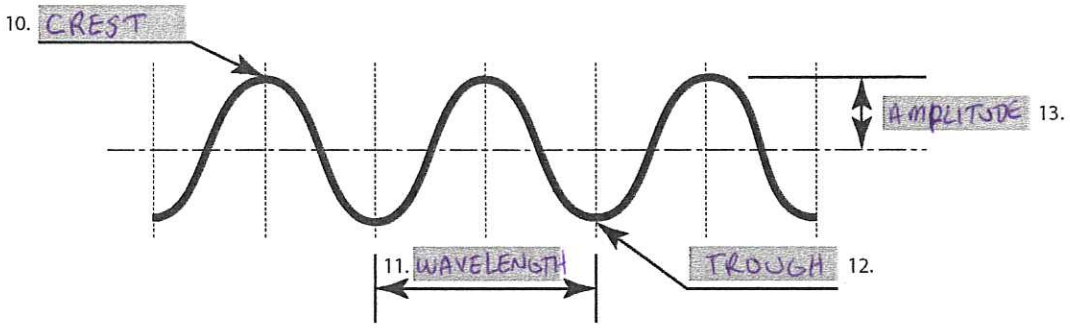
Section C - Label - Label the wave with the correct terms:



Section D - Multiple Choice - Write the correct answer in the space provided.

14. A What type of wave has a wavelength the size of a school bus?
A) Radio
B) Microwave
C) Infrared

15. A Frequency is:
A) The amount of waves that pass a point in 1 second
B) The distance a wave travels in 1 second
C) The amount of energy a wave has

16. C Light can be represented as:
A) only a wave
B) only a photon
C) both a wave and a photon

17. B An electron prefers to be...
A) in its excited state
B) in its ground state
C) jumping from energy level to energy level

18. A When an electron absorbs energy,
A) it jumps to a higher energy level
B) it jumps to a lower energy level
C) it moves much faster in its current energy level

19. A A professional photographer prefers
A) using lighting with a continuous spectrum
B) using lighting with a line spectrum
C) using black lights

Section E - Short Answer - Answer the following question in complete sentences.

20. Why does an electron NOT stay in its excited state?
AN ELECTRON DOES NOT STAY IN ITS EXCITED STATE BECAUSE IT HAS TOO MUCH ENERGY. THE e^- EMITS THE EXTRA ENERGY TO RETURN TO ITS GROUND STATE.

Name: Key
Period: _____ Table: _____

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General Chemistry
4.1 EM Review
Worksheet

EM Equations	c = Speed of Light (3.00×10^8 m/s) λ = wavelength (m) υ = frequency (Hz or s^{-1}) E = Energy (J) h = Planck's Constant (6.63×10^{-34} J-s)
$c = \lambda \upsilon$	
$E = h \upsilon$	

Part A - EM Wave Identification and Calculation - Fill-in the empty blocks

No.	Source	Wavelength λ (m)	Frequency υ (Hz)	Speed of Light c (m/s)	Type of EM Wave
1	TV Remote	9.4×10^{-7}	3.2×10^{14}	3.0×10^8	$c = \lambda\upsilon = 9.4 \times 10^{-7} * 3.2 \times 10^{14}$ IR
2	Neon Light	6.2×10^{-7}	4.8×10^{14}	3.0×10^8	$c = \lambda\upsilon = 6.2 \times 10^{-7} * 4.8 \times 10^{14}$ VISIBLE
3	Doppler Radar	1.5×10^{-1}	2.0×10^9	3.0×10^8	$c = \lambda\upsilon = 1.5 \times 10^{-1} * 2.0 \times 10^9$ MICRO WAVE
4	Cosmic Rays	6.3×10^{-13}	4.76×10^{20}	3.0×10^8	$\upsilon = c/\lambda = 3.0 \times 10^8 \div 6.3 \times 10^{-13}$ GAMMA RAY
5	Cell Phone	3.8×10^{-1}	7.9×10^8	3.0×10^8	$\upsilon = c/\lambda = 3.0 \times 10^8 \div 3.8 \times 10^{-1}$ RADIO
6	Black Light	2.3×10^{-7}	1.3×10^{15}	3.0×10^8	$\upsilon = c/\lambda = 3.0 \times 10^8 \div 2.3 \times 10^{-7}$ UV
7	Airport Full-Body Scanner	1.2×10^{-2}	2.5×10^{10}	3.0×10^8	$\lambda = c/\upsilon = 3.0 \times 10^8 \div 2.5 \times 10^{10}$ MICRO WAVE
8	Heat Lamp	6.3×10^{-6}	4.8×10^{13}	3.0×10^8	$\lambda = c/\upsilon = 3.0 \times 10^8 \div 4.8 \times 10^{13}$ IR

Part B - Ranking - Rank the EM waves above from Lowest Energy to Highest Energy (use Question Number)

9. 5 (RADIO) 3 (MW) 7 (MW) 8 (IR) 1 (IR) 2 (VIS) 6 (UV) 4 (GAM)

Lowest Energy — Highest Energy

Lowest Frequency — Highest Frequency